CLAIMS: We claim:

1. A micromechanical actuator, comprising:

   a nonmagnetic substrate having a top surface;

   a fixed magnetic core formed by deposition of ferromagnetic material onto the top surface of the substrate, the magnetic core having end faces spaced apart to define a gap in the core;

   a pivotably mounted driven member free to move through an arc of less than 360 degrees and attached to a stationary pivot point;

   a protruding magnetic tab affixed to one end of the pivotably mounted driven member, said tab comprising magnetic material and so disposed as to interact with the gap field over a portion of its allowed arc of rotation;

   means for supporting the pivotably mounted driven member above the substrate, said means providing the pivot point for angular movement of the member, and allowing the magnetic tab of the member to move through the vicinity of the gap field; and

   a coil of electrical conductor coupled to the fixed magnetic core to provide magnetic flux therethrough when the coil is supplied with electrical current, such that a magnetic field arises in the gap formed in the core which can impel motion to the pivotably mounted driven member by interaction of the gap field with the magnetic protruding tab on said member.

2. The actuator of claim 1 wherein the magnetic core and magnetic protruding tab are substantially in the same plane as the pivotably mounted member.

3. The actuator of claim 1 wherein the magnetic core and the magnetic protruding tab are made of ferromagnetic material.

4. The actuator of claim 1 wherein the magnetic core and the magnetic protruding tab are made of nickel-iron permalloy.

5. The actuator of claim 1 wherein the magnetic protruding tab is made of permanently magnetized material.

6. The actuator of claim 1 in which the magnetic protruding tab is offset from the center of the gap.

7. The actuator of claim 1 wherein the means for supporting the pivotably mounted driven member is a hinge formed integrally with the member, said hinge comprising a narrow isthmus of material connecting the member to the stationary pivot point, said isthmus being of appropriate dimension to allowed the desired range of elastic bending angularly about the pivot point.

8. The actuator of claim 7 wherein the pivotably mounted driven member has a plurality of stable orientations.

9. The actuator of claim 8 wherein the range of angular movement of the pivotably mounted driven member is constrained by an s-spring having a mechanical inflection point.

10. The actuator of claim 8 wherein the range of angular movement of the pivotably mounted driven member is constrained by a radial spring affixed to the member, and attached to the substrate at an anchor point, said anchor point being laterally separated from the stationary pivot point.

11. The actuator of claim 10, further comprising a serpentine portion in the radially compliant spring to increase angular compliance about said anchor point.

12. The actuator of claim 10 wherein the spring is affixed to the substrate via an integrally formed, angularly compliant pivot bearing.

13. The actuator of claim 12 wherein the pivot bearing is of clam-shell design.

14. The actuator of claim 12 wherein the pivot bearing is of accordion design.

15. The actuator of claim 12 wherein a utilitarian feature is affixed to the pivotably mounted driven member.

16. The actuator of claim 15 wherein the utilitarian feature is an electrical relay.

17. The actuator of claim 15 wherein the utilitarian feature is a fluid flow diverter.

18. The actuator of claim 15, further comprising a secondary magnetic circuit, sensitive to the position of the pivotably mounted driven member.

19. The actuator of claim 15, which further comprises a narrowed region in the second magnetic circuit which limits the amount of flux carried in the second magnetic circuit.

20. The actuator of claim 15 further comprising an inductance comparator which can distinguish the position of the magnetic tab relative to the core gap.

21. The actuator of claim 15, further comprising logic circuitry for applying a braking force to the driven member, based on the position measurement of the sensing circuit.

22. The actuator of claim 15, which further comprises logic circuitry for providing closed loop feedback control of the position of the driven member.

23. The actuator of claim 15, which further comprises logic circuitry for providing closed loop feedback control of the velocity of the driven member.

24. The actuator of claim 15, further comprising logic circuitry for driving the member in a predetermined velocity profile, based on prior measurement of the dynamics of the spring/pivot system.